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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,118	07/02/2001	Katsunori Hanakawa	740630-38	5087

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EXAMINER

MCGUTHRY BANKS, TIMA M

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)
	09/896,118		HANAKAWA ET AL.
	Examiner		Art Unit
	Tima M. McGuthry-Banks		1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1,5</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities: page 4 is unclear. Appropriate correction is required.

Claim Objections

3. Claims 9 and 13 are objected to because of the following informalities: In Claims 9 and 13, the phrase "predetermine mold" in line 8 of each is unclear. The examiner suggests applicants use "predetermined mold". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

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5. Claims 3-6, 9, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 3 lacks sufficient antecedent basis for the limitation “the surface part” in line 3 with respect to Claim 1.
7. Claim 3 lacks sufficient antecedent basis for the limitation “the inside center part” in lines 3 and 4 with respect to Claim 1.
8. Claim 4 lacks sufficient antecedent basis for the limitation “the unspecific region” in line 6 with respect to Claim 1.
9. In Claim 4, the limitation “bent-deforms” in lines 4 and 5 is unclear.
10. Claim 5 lacks sufficient antecedent basis for the limitation “the part other than ...” in lines 4 and 5 with respect to Claim 4.
11. Claim 9 lacks sufficient antecedent basis for the limitation “the final shape” in line 6 with respect to Claim 1.
12. In Claim 12, the limitation “formed member is filled with foamed material, by setting ...” is unclear.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hook (US 4,046,601).

Hook anticipates the claimed invention. Hook teaches producing stamped or deep drawn parts from a highly formable steel (column 1, lines 12-14). The untreated steel has tensile strengths of 317 MPa and 326 MPa (Table K). The steel is cold rolled and nitrided (column 4, lines 14 and 15). After nitriding for three hours, the steel has a hardness of 36C (equivalent to about 340 HV; see the Conversion Chart of Vickers Hardness (HV) to Rockwell C (HRC)). Regarding Claim 2, the steel comprises titanium, columbium (same as niobium), and aluminum (column 5, lines 53-60). Regarding Claim 3, the hardness value 36C was for the entire thickness of the material, which reads on a difference of 200 HV or less.

Claim Rejections - 35 USC § 103

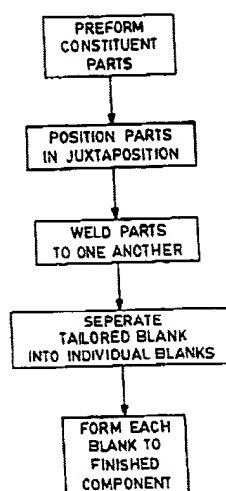
15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hook '601 as applied to Claims 1-3 above, and further in view of Duley et al (US 6,426,153 B1) and Kurita et al (US 6,083,455).

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Hook discloses the invention substantially as claimed. However, Hook does not teach the forming steps as claimed. Duley teaches a tailored bank that is made by welding a pair of parts such as sheet metal together as shown below in Figure 17.

FIG. 17

The formed component can be used in the automobile industry (column 1, lines 23 and 24). It would have been obvious to one with ordinary skill in the art at the time the invention was made for to form the steel of Hook into the process of Duley, since Duley teaches that this forming process mitigates the need for accurately fitting parts, and welding additional components after the forming process is avoided (column 6, lines 39-46). Kurita further teaches that nitrided steel is used for automobile parts (column 1, lines 12-18).

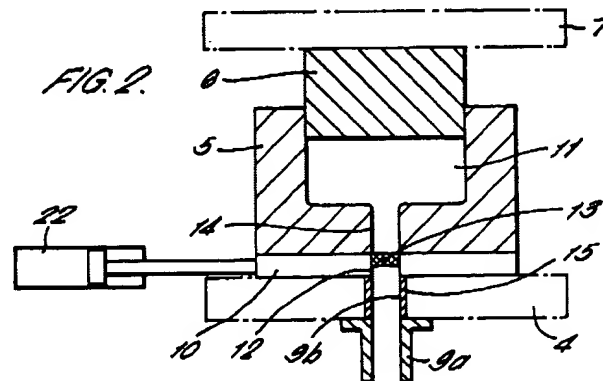
17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hook '601 as applied to Claims 1-3 above, and further in view of Futaki (JP 02066255).

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Hook discloses the invention substantially as claimed. However, Hook does not disclose the forming steps as claimed. Futaki teaches improving the strength and corrosion resistivity of a building panel made of steel. A combined backing layer of an iron nitride layer and an oxide film is formed on the steel, and a resin foam layer is provided in a recessed hollow part of the steel (abstract). Regarding the teaching of the thermal expansion, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the foam would expand to some degree upon heating, since thermal expansion is an obvious material property of resin materials. It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the forming process of Futaki for the steel in Hook, since Futaki teaches that the strength and corrosion resistivity of the steel is improved (abstract).

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hook '601 as applied to Claims 1-3 above, and further in view of Chadwick (US 5,908,065).

Hook discloses the invention substantially as claimed. However, Hook does not disclose the forming steps as claimed. Chadwick teaches squeeze casting as shown below in Figure 2.



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During solidification, the pressure is applied to reduce the volume of the mold cavity to compensate for contraction during solidification (column 10, Claim 19). The sliding gate 10 is operated by hydraulic cylinder 22 (column 5, lines 55 and 56). Ferrous metal alloys can be squeeze cast using this method (column 8, lines 17-20). It would have been obvious to one with ordinary skill in the art at the time the invention was made to cast the steel in Hook with the process taught by Chadwick, since Chadwick teaches that this casting process results in a high quality near net shape castings at an economically viable production rate (column 3, lines 21-25).

19. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duley '153 in view of Hook '601 and Kurita '455.

Duley teaches a tailored bank that is made by welding a pair of parts such as sheet metal together as shown below in Figure 17.

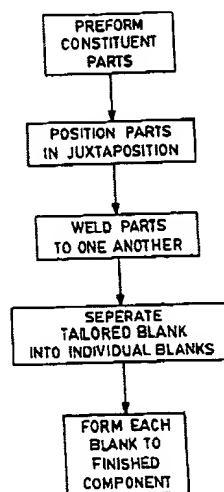


FIG. 17

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The formed component can be used in the automobile industry (column 1, lines 23 and 24).

Regarding Claim 11, the two parts have differing characteristics (column 2, line 59). However, Duley does not teach that one of the preformed parts is a steel sheet with the claimed properties as claimed in Claim 10.

Hook teaches a stamped or drawn steel part that has an untreated tensile strength of 317 MPa and 326 MPa (Table I). The steel is cold worked and nitrided (column 4, lines 14 and 15). After nitriding, the steel has a hardness of 36C (equivalent to about 340 HV; see the Conversion Chart of Vickers Hardness (HV) to Rockwell C (HRC)). It would have been obvious to one with ordinary skill in the art at the time the invention was made for Duley to use the steel sheet taught by Hook, since Hook teaches producing a highly formable steel economically (column 3, line 43) and Kurita teaches that nitrided steel is used for automobile parts (column 1, lines 12-18).

20. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futaki '255 in view of Hook '601.

Futaki teaches improving the strength and corrosion resistivity of a building panel made of steel. A combined backing layer of an iron nitride layer and an oxide film is formed on the steel, and a resin foam layer is provided in a recessed hollow part of the steel (abstract).

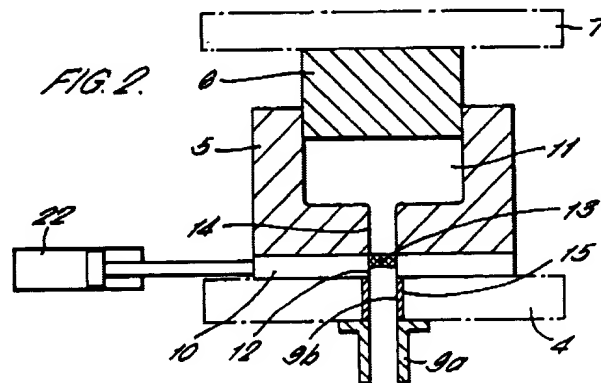
Regarding the teaching of the thermal expansion, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the foam would expand to some degree upon heating, since thermal expansion is an obvious material property of resin materials. However, Futaki does not teach the properties of the steel as claimed in Claim 10.

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Hook teaches a stamped or drawn steel part that has an untreated tensile strength of 317 MPa and 326 MPa (Table I). The steel is cold worked and nitrided (column 4, lines 14 and 15). After nitriding, the steel has a hardness of 36C (equivalent to about 340 HV; see the Conversion Chart of Vickers Hardness (HV) to Rockwell C (HRC)). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the nitriding treatment of Hook in the process of Futaki, since Hook teaches producing a highly formable steel economically (column 3, line 43).

21. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick '065 in view of Hook '601.

Chadwick teaches squeeze casting as shown below in Figure 2.



During solidification, the pressure is applied to reduce the volume of the mold cavity to compensate for contraction during solidification (column 10, Claim 19). The sliding gate 10 is operated by hydraulic cylinder 22 (column 5, lines 55 and 56). Ferrous metal alloys can be

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squeeze cast using this method (column 8, lines 17-20). However, Chadwick does not disclose the properties of the cast metal as claimed in Claim 10.

Hook teaches a stamped or drawn steel part that has an untreated tensile strength of 317 MPa and 326 MPa (Table I). The steel is cold worked and nitrided (column 4, lines 14 and 15). After nitriding, the steel has a hardness of 36C (equivalent to about 340 HV; see the Conversion Chart of Vickers Hardness (HV) to Rockwell C (HRC)). The steel is cast from the melt (column 4, line 7). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the steel in Hook to cast the steel in the process of Chadwick, since Chadwick teaches that this casting process results in a high quality near net shape castings at an economically viable production rate (column 3, lines 21-25).

Allowable Subject Matter

22. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: Hook does not disclose or suggest nitriding only a specific region of the formed member and then having the formed member bend or deform at a boundary between the specific region and the unspecific region as claimed.

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Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Regarding the EPO search report, Hook (US 3,847,682) teaches producing drawn steel with as-received tensile strengths of 43.6, 48.6, 45.5, and 44.8 ksi in Table II, which reads on 303, 335, 314, and 309 MPa. The steel is cold rolled (e.g. Table II), and heat-treated in ammonia for nitriding (*ibid*). However, Hook '682 teaches away from achieving high hardness in column 4, lines 4 and 5. Ronay (US 3,887,362) teaches manufacturing a steel body by conventional press-forming technologies and nitriding. The hardness is about 600 HV (column 9, lines 45-49). However, Ronay does not disclose or suggest the initial tensile strength as claimed.

Costello et al (US 5,753,076) teaches creping doctor blades useful for making soft tissues that are improved by ion nitriding the surfaces to produce a hardened surface (abstract). The hardness of the compound zone was about 65 HRC, the diffusion zone decreasing about 53 HRC to 48 HRC toward the center of the blade (column 4, lines 29-34). The blades had a non-brittle interior and retained sufficient resiliency to bend (lines 36-38).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tima M. McGuthry-Banks, whose telephone number is 703-308-1917. The examiner can normally be reached on 9:30-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King, can be reached on 703-308-1146. The fax numbers for the

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organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0651.


Tima M. McGuthry-Banks
Examiner
Art Unit 1742

September 14, 2002